

Applicant's Docket No. RD-25712
Appl. No. 09/319,906
Reply to Office communication of May 6, 2003

REMARKS/ARGUMENTS

Enclosed herewith is a Petition to extend the term for response by one month to September 6, 2003.

Claims 9, 10 and 15 to 27 remain in this application. Claims 1 to 8 and 11 to 14 have been canceled. Claims 26 and 27 are newly added.

Claim 25 is objected to under 35 CFR 1.75. Claims 9 to 10 and 15 to 19 are rejected under 35 USC 103(a) as being unpatentable over Bridgman (US 1,703,672) in view of Giamei et al. (US 3,700,023). Claims 20 to 25 are rejected under 35 USC 103(a) as being unpatentable over Bridgman in view of Giamei et al. and further in view of Kats et al. (US 5,921,310). No claim is allowed.

Claim 25 is amended to correct a typographical error: claim 25, previously dependent on claim 22, is now dependent on claim 24.

Claims 9 to 10 and 15 to 19 are rejected under 35 USC 103(a) as being unparentable over Bridgman in view of Giamei et al. The applicant traverses the rejection of claims 9 to 10 and 15 to 19 for the following reasons. Independent claim 9 recites that the cooling zone comprises a tank having an open upper portion and a closed bottom portion with water-cooled walls extending therebetween, the open upper portion being immediately adjacent to the heating zone. As disclosed in the application as filed, for example, at page 2, the paragraph beginning at line 4 and the paragraph beginning at line 16 or at page 4, the paragraph beginning at line 21, it is a feature of the present invention as recited in the claims, to provide a cooling zone comprising a water-cooled tank "instead of a chill plate" (as now recited in new claim 26 dependent on claim 9 and new claim 27 dependent on claim 22). The prior art uses a chill plate is a cooling zone or in combination with a further cooling zone, the later having a function distinct from the chill plate.

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The Examiner acknowledges that Bridgman fails to disclose a cooling zone as recited in claim 9 and asserts that Giamei et al. teaches the a cooling zone as recited in claim 9. The Examiner asserts that it would be obvious to provide Bridgman with the cooling zone as taught by Giamei et al. In Bridgman the cooling zone is formed by the pipe/shield 14 extending from the bottom of the furnace 4. Cooling is accomplished entirely by outside or atmospheric cooling (page 2, line 77 to 78 and page 5, line 90 to 91 and lines 115 to 116). Bridgman does not disclose any alternative to outside or atmospheric cooling.

The Examiner asserts that Giamei et al. teaches a water-cooled tank 41 wherein heat is radiated from the mold and cooled by water-cooled means 39. Giamei et al. discloses the same features as the previously cited Salkeld and more particularly the previously cited Doriath et al., neither of which are further relied upon in any rejection of any claim. As noted at page 10, fourth paragraph, beginning at line 4, in the prior amendment: "The cooling coils 26, together with the heating elements 24, of Salkeld are for the purpose of controlling the temperature of the liquid cooling provided by the bath 20 and liquid 22. This function is distinct and separate from the function of the chill plate 4. The cooling in Salkeld is not by radiation cooling as recited in claim 9 as filed and as amended but by conduction or convection cooling. Similarly, in Doriath et al. the function of the cooler 24 is distinct from the function of the chill plate formed by plate 62." In Giamei et al. chill plate 14 and water-cooled passages 41 are equivalent to chill plate 62 and cooler 24 of Doriath et al.

Accordingly, there is no motivation or justification for one skilled in the art to provide in Bridgman any water-cooled passages as taught by Giamei et al.

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The Examiner acknowledges that with respect to claim 15 neither Bridgman or Giamei et al. disclose a truncated tank. The structure of a truncated tank is not directly related to the cooling but functions as a more reliable "catch basin in the event of mold breakage" (see page 5, line 20 of the application). There is no teaching of a truncated cross-sectional tank having a open upper portion and a closed bottom portion with water-cooled walls extending therebetween and the bottom portion having a smaller base than the upper portion. The rejection of a claim must be based on the prior art cited and not the speculation of the Examiner as to the skill of the art.

Still further, there is no teaching in the cited references of the features of recited in other rejected claims, such as claims 10 or 17 or 18 or 19.

Claims 20 to 25 are rejected under 35 USC 103(a) as being unpatentable over Bridgman in view of Giamei et al. and further in view of Kats et al. (US 5,921,310). The Applicant traverses the rejection of claims 20 to 25 for the following reasons. The Examiner acknowledges that neither Bridgman nor Giamei et al. disclose the use of a vacuum chamber as recited in claim 20. Kats et al. is cited for use of a vacuum chamber. It is noted that an equivalent patent family member, EP 0 749 790 A1, to the cited Kats et al. is already cited by the applicant in the Information Disclosure Statement submitted with the June 14, 1999 filing of the present application. The cited EP 0 749 790 A1 is cited in the International Search Report (ISR) issued by the European Patent Office as the International Searching Authority (ISA). In the ISR the ISA cited EP 0749 790 A1 as being a "document defining the general state of the art which is not considered to be of particular relevance" with respect to claims 1 and 9 of the PCT International Application. Claim 9 of the PCT International Application is a method claims that recites a "cooling zone (13) comprising a water-cooled tank (6); and solidifying the molten alloy by radiation onto the water-cooled walls of the tank (6)." This feature is also recited in present claims 20 and 21 each dependent on present claim 9. In regard to claims 22 and 24, the Examiner makes the same assertion as was made for claim 15. Applicant's Remarks/Argument with respect to claim 15 is fully applicable to claims 22 and 24.

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In regard to claim 21, in the cited Kats et al. there is only one heating means, viz, elements 16 in chamber 4. There is no preheating furnace and an induction furnace as recited in claim 21.

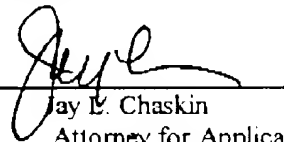
The statutory and prior art basis for the rejection of claim 22 is the same as for claim 9. The Remarks/Arguments traversing the rejection of claim 9 are fully applicable to the rejection of claim 22.

Applicant respectfully requests that a timely Notice of Allowance be issued in this application.

Respectfully submitted,

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